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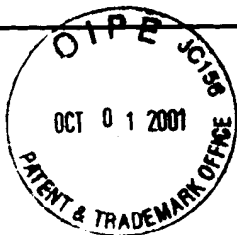
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The
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The Commissioner of
Patents and Trademarks

Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

United States Patent

Grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America for the term set forth below, subject to the payment of maintenance fees as provided by law.

If this application was filed prior to June 8, 1995, the term of this patent is the longer of seventeen years from the date of grant of this patent or twenty years from the earliest effective U.S. filing date of the application, subject to any statutory extension.

If this application was filed on or after June 8, 1995, the term of this patent is twenty years from the U.S. filing date, subject to any statutory extension. If the application contains a specific reference to an earlier filed application or applications under 35 U.S.C. 120, 121 or 365(c), the term of the patent is twenty years from the date on which the earliest application was filed, subject to any statutory extension.

Bence Lehman

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Nguyen et al.

[45] **Date of Patent:** Jan. 20, 1998

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|-----------|---------|-----------------------|---------|
| 5,177,238 | 1/1993 | Lee et al. | 437/47 |
| 5,188,987 | 2/1993 | Ogino | 437/235 |
| 5,204,288 | 4/1993 | Marks et al. | 437/228 |
| 5,219,792 | 6/1993 | Kim et al. | 437/195 |
| 5,290,399 | 3/1994 | Reinhardt | 437/228 |
| 5,319,247 | 6/1994 | Matsuura | 257/760 |
| 5,373,170 | 12/1994 | Pfiester et al. | 257/903 |
| 5,381,046 | 1/1995 | Cederbaum et al. | 257/904 |
| 5,534,731 | 7/1996 | Cheung | 257/760 |
| 5,552,628 | 9/1996 | Watanabe et al. | 257/760 |

FOREIGN PATENT DOCUMENTS

- | | | | |
|---------|--------|-------------|---------|
| 0099243 | 4/1989 | Japan | 257/760 |
| 0135044 | 5/1989 | Japan | 257/760 |
| 2251722 | 7/1992 | Japan | 257/760 |
| 8700828 | 4/1987 | WIPO | 257/760 |

[56] **References Cited**

IEEE Electron Device Letters, vol. 12, No. 3, Mar. 1991, Hot-Carrier Aging of the MOS Transistor in the Presence of Spin-On Glass as the interlevel Dielectric, by N. Lifshitz and G. Smolinsky, pp. 140-142.

Journal Electrochem. Soc., vol. 139, No. 2, Feb. 1992, Three "Lot Dt" Options for Planarizing the Pre-Metal Dielectric on an Advanced Double Poly BiCMOS Process, by W. Dauksher, M. Miller, and C. Tracy, pp. 532-536.

Journal Electrochem. Soc., vol. 139, No. 2, Feb. 1992, Polysilicon Planarization Using Spin-On Glass, by Shrinath Ramaswami and Andrew Nagy, pp. 591-599.

Journal Electroniconem. Soc., vol. 140, No. 4, Apr. 1993, The Effect of Plasma Cure Temperature on Spin-On Glass, by Hideo Namatsu and Kazushige Minegishi, pp. 1121-1125.

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[57] **ABSTRACT**

A 4-T SRAM cell in which two layers of permanent SOG (with an intermediate oxide layer) are used to provide planarization between the first and topmost poly layers.

18 Claims, 5 Drawing Sheets

